

REMARKS

Claims 1, 16, and 18 have been amended, claims 17 and 21 have been canceled, and claims 3-9, 11-12, 19-20, and 22 are pending. No new matter has been added by way of this amendment.

The Examiner has rejected claim 3 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Per the Examiner's suggestion, Applicant has amended claim 3 to replace the recitation "(meth)acrylate" with "acrylate" and "(meth)acrylamide)" with "acrylamide." Accordingly, the rejection should be withdrawn.

The Examiner has also rejected claim 16 under 35 U.S.C. §112, second paragraph, as being indefinite. To cure this rejection, Applicant has amended claim 16 to depend from claim 1 and not claim 15. Accordingly, the rejection should be withdrawn.

The Examiner has rejected claims 1, 3-4, 11-12, 16, and 19-22 under 35 U.S.C. §102(b) as anticipated by *Midha* (WO97/33556). The Examiner believes that *Midha* teaches all of the limitations of the claimed invention. Applicant respectfully disagrees.

Contrary to the Examiner's belief, *Midha* does not teach dispersions of a graft copolymer in non-aqueous non-silicone media as in the claimed invention. Rather, *Midha* consistently refers to the compositions as solutions of graft copolymers which "as a whole [are] soluble in hydrophobic, volatile solvent[s]." *Midha*, pg.8, ll.25-26 and pg.16, ll.30-31. *Midha* defines "soluble" as the "maximum concentration of monomer or polymer that can dissolve in water or other solvent to form a solution that is substantially clear to the naked eye, as is well understood to those skilled in the art." *Id.* at pg.6, ll.4-7, emphasis added. Plainly, the polymer solutions of

Midha are not dispersions of polymer particles as in the claimed invention.

Nor is there any disclosure in *Midha* that the polymers can be present in a form other than dissolved in solution or that polymer particles are advantageous. While *Midha* does provide that the polymer solutions, i.e. graft copolymer dissolved in the hydrophobic volatile solvent, can form droplets when introduced into a cosmetic carrier, this is only because the solvent is immiscible in the carrier. *Midha*, pg.17, ll.31-33. Indeed, *Midha* provides that "[t]he hydrophobic, volatile solvent, is insoluble in aqueous carriers", such as those used in hair care compositions, even "in the absence of the copolymer[] or emulsifying agents..." *Id.* at pg.16, ll.33-364. Thus, the droplets referred to in *Midha* are simply inclusions of the polymer solution in the carrier used for hair care compositions, and not a polymer dispersion as in the claimed invention.

To further emphasize this distinction, claim 1 has been amended to include the limitation that the polymer particles have a mean size ranging from 10-400nm. Because *Midha* does not disclose polymer particles, and certainly not particles of this size, *Midha* does not anticipate the claimed invention. Accordingly, this rejection should be withdrawn.

The Examiner has rejected claims 1, 3-4, 11-12, and 16-22 under 35 U.S.C. §103(a) as being unpatentable over *Midha* (WO 97/33556). The Examiner believes that while *Midha* "discloses that the amount of macromolecule could be from 5-70% by weight of the total copolymer," *Midha* does not describe using an amount of macromolecule within Applicant's claimed range. *Office Action*, page 5. Moreover, the Examiner states "that the hydrophobic side chain[s] closely associate with each other and exist substantially in one microphase, while the backbone exist[s] in another phase[,] and the phase separation provides a

specific orientation of the graft copolymer which results in desirable [properties]." *Id.* at page 6. Thus, the Examiner has determined that it would have been obvious to routinely adjust the amounts of side chain grafts for purposes of achieving this phase separation and optimizing the overall properties of the block copolymer. *Id.* Applicant disagrees with this determination.

As acknowledged by the Office, *Midha* discloses graft copolymers for use in cosmetics wherein the backbone and side chains grafts phase separate into two distinct, immiscible interspersed microphases. *Office Action*, page 6; *Midha*, pg.7, ll.10-26. *Midha* goes even further and teaches that the phase separation of block copolymers is a function of the amount of side chain present. For example, *Midha* discloses that when side chain grafts make up "20-50% by weight of the grafts, the hydrophobic grafts tend to microphase separate to form rubbery domains within the backbone matrix." *Midha*, pg.7, ll.30-34.

As a consequence of this phase separation, the graft copolymers of *Midha* have at least two distinct glass transition temperatures, i.e. one T_g for the backbone and a separate T_g for the hydrophobic side chains. *Id.* at pg.7, ll.27-29.

The graft copolymers of the present invention are characterized by having a relatively high strength, high T_g polymeric backbone with a low T_g , hydrophobic polymeric side chain covalently bonded to and pendant from the polymeric backbone.

Id. at pg.6, ll.15-18. *Midha* touts the advantages of a polymer having at least two distinct glass transition temperatures as allowing the copolymer to have "unique and useful properties" which cannot be achieved alone. *Id.* at pg.6, ll.18-19.

Midha even goes so far as to disclose and claim specific ranges for the glass transition temperatures and specifies that

[b]y appropriate selection and combination of the particular [monomers], and by the choice of specific relative ratios of the units well within the ability of one of ordinary skill, the copolymers can be optimized for various properties such as solubility, T_g 's, and the like..

Id. at pg.8, ll.32-36. Clearly, microphase separation and the resultant two glass transition temperatures are critical aspects of *Midha's* invention.

In contrast to the teachings of *Midha*, the polymer dispersions of the claimed invention are stable and do not phase separate; instead they form stable dispersions of polymer particles.

According to the invention, the term 'stable dispersion' means a dispersion that is not liable to form a solid deposit or to undergo liquid/solid phase separation especially after centrifugation, for example at 4,000 rpm for 15 minutes.

Application, [0026]. Similarly, Example 1 describes the stability testing undertaken and provides that the polymer dispersions are "stable" when no phase separation occurs.

Application, [0098]. In fact, all of the working examples indicate formation of stable polymer dispersions and thus, no phase separation. Nor do the graft polymers of the claimed invention have two distinct glass transition temperatures. Accordingly, the teachings of *Midha* are diametrically opposed to the claimed invention.

Therefore, one skilled in the art would not have been motivated by the teachings of *Midha* to form stable dispersions of polymer particles, as that term is defined in the present

invention, when *Midha* teaches that phase separation occurs and is desirable. Thus, this rejection must be withdrawn.

The Examiner has also rejected claims 1, 3-4, 11-12, and 16-22 under 35 U.S.C. §103(a) as being unpatentable over *De La Poterie* (United States Patent 6,254,877) in view of *Midha*. The Examiner alleges that *De La Poterie* discloses a "cosmetic composition comprising a dispersion of [] non-film forming polymer particles in a non-volatile liquid fatty phase...[which] are surface stabilized by means of a stabilizer that includes a graft copolymer with a poly(methyl methacrylate) backbone and polyisobutylene graft unit." *Office Action*, page 6. The Examiner has determined that "[o]ne of ordinary skill in the art would have a reasonable expectation of success in substituting the graft copolymer of [*De La Poterie*] with the graft copolymer of *Midha* since both the graft copolymers are very similar in structure." *Office Action*, page 7. Applicant disagrees.

As admitted by the Office, *De La Poterie* does not disclose the weight percent of the side chain grafts comprising the copolymer. *Id.* at page 7. Applicant submits that a person of ordinary skill would not have been motivated to substitute the amounts of side chain grafts recited in *Midha* with the polymers of *De La Poterie*.

When the teachings of the cited art are considered collectively, it is apparent that *De La Poterie* and *Midha* had different objectives in mind. For *De La Poterie*, it was the formulation of stable polymer particles, which according to the preferred embodiments, the examples, and claims, required the addition of a second stabilizing polymer. *De La Poterie*, col.4, ll.11-13; col.8, ll.6-13; and col.12, ll.52-63. There is no indication in this reference that stable dispersions could be formed without the addition of a stabilizing polymer.

On the other hand, the goal of *Midha* was to produce polymer solutions free from any dispersed particles. *Midha*,

pg.8,11.25-26 and pg.16,11.30-31. To achieve, this *Midha* picked appropriate backbones and side chains, in particular ratios, which provided the desired solubility, phase separation, and at least two glass transition temperatures. *Id.* at pg.8,11.32-36. Moreover, the present specification teaches that polymer solutions that microphase separate cannot form stable polymer dispersions. *Application*, [0026] and [0098].

Judged from this perspective, one skilled in the art would not have been motivated to substitute the concentrations of side chain grafts of *Midha*, without the addition of an additional stabilizing agent, to produce the stable polymer dispersions of the claimed invention. There is just no teaching or suggestion in the collective art that this can be achieved. Accordingly, this rejection must be withdrawn.

Finally, the Examiner contends that the Applicant's declaration submitted on April 28, 2008 is insufficient to overcome the rejection of claims 1, 3-4, 11-12, and 16-22 based on *Midha*. *Office Action*, page 7. Specifically, the Examiner alleges that "the comparative examples the declaration all use side chains in excess of 20% by weight of the total polymer, but *Midha* describes the use of a graft copolymer with side chains in amounts of 20% by weight of the total polymer." *Id.* Thus, the Examiner believes that the "examples are not within the full scope of the type[] of graft copolymers encompassed by the teachings of *Midha*." *Id.* at page 8. Applicant respectfully disagrees and submits that the evidence in the Declaration is compared with the closest prior art, *i.e.* *Midha*. Applicant has made these comparisons with the teachings of *Midha* in mind, and submits that the comparative examples are consistent with *Midha's* teachings.

As discussed in the previous Amendment, while *Midha* discloses a broad range of side chain grafts (from about 5% to about 70%), it does not teach the importance of any range, and

certainly does not teach the criticality of the claimed range, i.e. an amount of side chain grafts between 2% and 16%.

According to the evidence presented in the Declaration, Applicant has found that an amount of side chain grafts within the claimed range allows for the formation of polymer dispersions having unexpected results, i.e. improved staying or holding power. The comparative examples also illustrate that when the concentration of side-chain grafts increases beyond the claimed range, polymer solutions result rather than polymer dispersions.

Even though the comparative examples provided are different than *Midha*¹, they are fully consistent with the findings reported by *Midha*. As stated above, *Midha* consistently refers to its compositions as solutions of graft copolymers which "as a whole [are] soluble in hydrophobic, volatile solvent[s]." *Midha*, pg.8, ll.25-26 and pg.16, ll.30-31. The results demonstrate that the wholly soluble polymers described by *Midha* are consistent with Applicant's findings that higher side chain concentrations provide for polymer solutions and not dispersions, as detailed in the Declaration.

Indeed, "[t]he nonobviousness of a claimed range can be supported by evidence based on unexpected results from testing a narrower range if one of ordinary skill in the art would be able to determine a trend in the exemplified data which would allow the artisan to reasonably extend the probative value thereof. *In re Kollman*, 595 F.2d 48, 201 USPQ 193 (CCPA 1979)." MPEP 716.02(d). Here, one of ordinary skill in the art would be able to conclude, from the trend in the cumulative data, that the results presented in *Midha* are consistent with those in the Declaration.

¹ *Midha* discloses 20% side chain grafts in one example while the comparative examples disclose 25% and 30% side chain grafts. It is believed that this 5%

Therefore, because Applicant has compared the claimed invention to the closest prior art, *i.e.* *Midha*, and has confirmed its findings, *i.e.* formation of polymer solutions as the side chain concentration increases Applicant requests that the Declaration be reconsidered as being probative of nonobviousness.

As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance are earnestly solicited.

If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that he/she telephone applicant's attorney at (908) 654-5000 in order to overcome any additional objections which he might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

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Respectfully submitted,

By 

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difference is immaterial since the results are consistent with that described in *Midha*.